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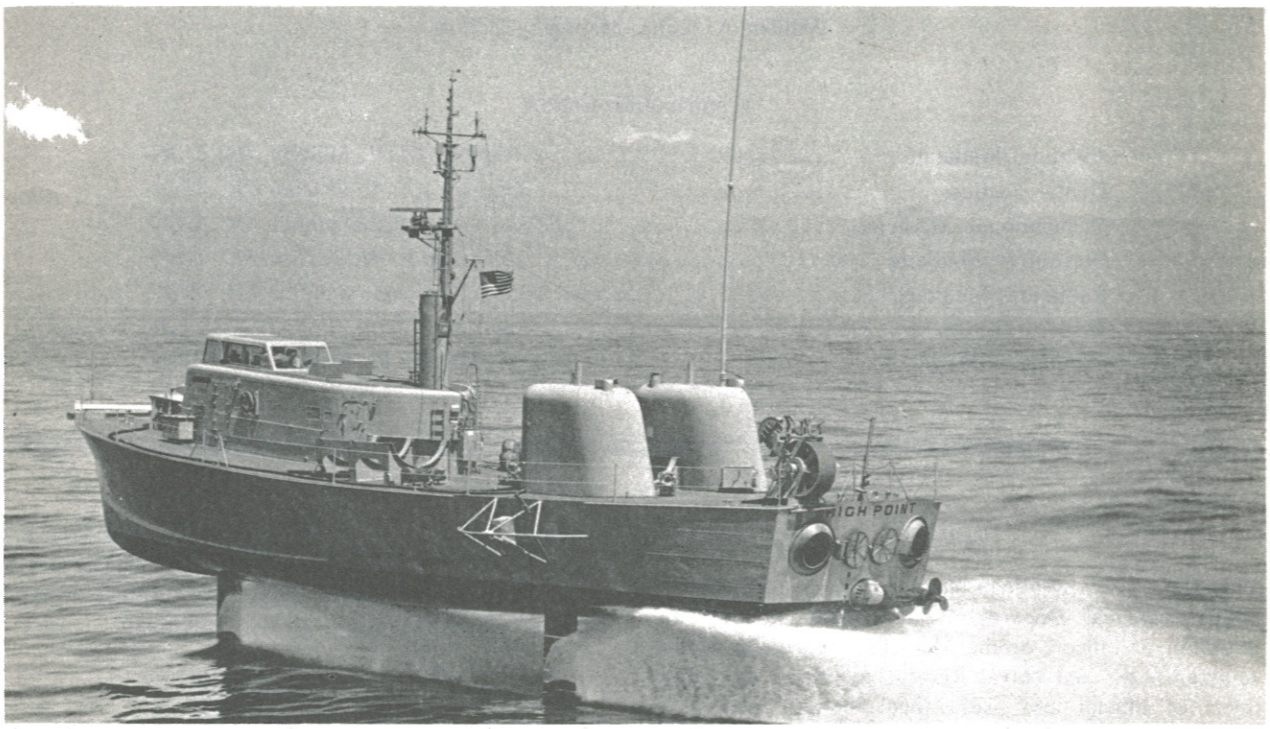

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Policy

The U.S. Navy Medical News Letter is basically an official Medical Department publication inviting the attention of officers of the Medical Department of the Regular Navy and Naval Reserve to timely up-to-date items of official and professional interest relative to medicine, dentistry, and allied sciences. The amount of information used is only that necessary to inform adequately officers of the Medical Department of the existence and source of such information. The items used are neither intended to be, nor are they, susceptible to use by any officer as a substitute for any item or article in its original form. All readers of the News Letter are urged to obtain the original of those items of particular interest to the individual.

Change of Address

Please forward changes of address for the News Letter to: Commanding Officer, U.S. Naval Medical School, National Naval Medical Center, Bethesda, Maryland 20014, giving full name, rank, corps, and old and new addresses.

FRONT COVER: U.S. NAVY'S HIGH POINT OPERATES SUCCESSFULLY IN ROUGH-WATER TESTS The PCH High Point, the U.S. Navy's first operational hydrofoil, is shown during initial rough-water tests held recently off the northwesternmost tip of Washington State. The High Point, a 110-ton craft built for the Navy's Bureau of Ships by The Boeing Company, was tested in the Strait of Juan de Fuca and in the Pacfic Ocean off Cape Flattery. It operated in waves averaging 5½ feet (1.67 m) high. Further rough-water tests to gather data on the High Point's hydrofoil system will be conducted in the future. The craft is designed to exceed 50 miles an hour (80 km/h).

—From: News Bureau, The Boeing Company, Seattle, Washington 98124—Boeing Photo.

The issuance of this publication approved by the Secretary of the Navy on 4 May 1964.

Report on the Second Parathyroid Symposium Held at NOORDWIJK AAN ZEE, THE NETHERLANDS* August 25-29, 1964

By Robert VAN REEN, PhD, Head of the Nutritional Biochemistry Division, Clinical Investigation Department Naval Medical Research Institute, NNMC, Bethesda, Md.

The conference was held under the joint sponsorship of Leiden University, the Netherlands, and Rice University, Houston, Texas. Attendance at the symposium was limited to speakers and invited participants. The program was divided into two broad areas: (1) The Parathyroid Gland: the fine structure, the histochemistry, regulation of secretion, and the chemistry of the hormone and (2) The Mode of Action of Parathyroid Hormone(s): the influence on homeostatic mechanisms, the influence on transport and ion exchange, the influence at the tissue level, the influence on cell organelles, and the influence on metabolic pathways and individual enzyme activities.

Several of the reports were of particular interest. Drs. J. T. Potts, Jr. and G. D. Aurbach of the National Institutes of Health have purified the parathyroid hormone and reported on its chemical structure. The hormone appears to be a single chain polypeptide of molecular weight about 9000 containing no cystine but a total of 75 amino acid residues. The carboxyl terminal group is due to leucine and the amino end group, alanine. Dr. Aurbach also reported a new method of analysis for the purified hormone which can be used for the assay of from 7×10^{-9} to 10^{-6}M of parathormone.

Two papers concerning the newly discovered hormone, *calcitonin,* were quite interesting since it now appears that there are two hormones controlling calcium levels in the serum, with parathormone tending to increase the concentration and calcitonin acting to lower it. Dr. D. H. Copp of the University of British Columbia and his group have developed techniques for in-vivo perfusion by which the thyroid gland or the parathyroids can be perfused with high calcium solutions or with ethylenediamintetracetic acid to produce low calcium solutions. Dr. Copp feels that the parathyroid gland of sheep can be the source of calcitonin since he gets a reduction in peripheral serum calcium when the parathyroid is perfused with high calcium and also observes an effect in thyroidectomized animals. Dr. I. MacIntyre of the Postgraduate Medical School of London presented extensive data to demonstrate that the thyroid gland produces a material which lowers serum calcium levels. He has purified hog thyroid and has obtained a material which is stable to boiling at neutrality. The active material appears to be a polypeptide having a molecular weight of about 3000. In general it appears that Dr. MacIntyre's calcitonin from the thyroid is a real observation. Whether there is a similar material produced by the parathyroid glands must await further data.

Dr. P. Goldhaber of Harvard University presented a beautiful time-lapse film showing the formation of giant osteoclasts through the fusion of smaller cells and which also clearly demonstrated the resorption of bony spicules by giant osteoclasts. He also reported data which indicate that heparin potentiates the action of parathyroid hormone in causing the resorption of calcium from mouse calvaria in tissue culture. Dr. G. Nichols, Jr. of Harvard Medical School indicated that *in his clinical work a number of patients being treated with heparin for cardiovascular disease have developed osteoporosis.* Dr. Goldhaber mentioned that others have shown that *dogs given serial injections of heparin develop spontaneous fractures.*

Several papers were presented on the influence of parathyroid extracts on biochemical systems with the idea of trying to find some parathormone-responsive system which might be related to the rapid dissolution of calcium from apatite. Several speakers were concerned with citric acid metabolism in bone, since citrate levels increase in response to parathormone injections and citrate will chelate with calcium. I presented the

* Submitted to the Medical News Letter by CAPT John R. Seal MC USN, Commanding Officer of the Naval Medical Research Institute.

work performed at the Naval Medical Research Institute which showed that although citric acid increases, the enzymes responsible for the further metabolism of citric acid are not altered by parathormone and, surprisingly, the coenzyme for one of the enzymes, isocitric dehydrogenase, actually increases in concentration in bone. Possible mechanisms of the action of parathormone were presented.

One afternoon was spent visiting the facilities of the Laboratorium voor Celbiologie en Histologie of Leiden University which is under the direction of Professor P. J. Gaillard and which carries out a broad program on tissue culture, bone growth and development, and bone metabolism.

Triage in Management of Radiation Casualties

CAPT Theodore H. Wilson, Jr., MC USN. From the Proceedings of the Monthly Staff Conferences of the U. S. Naval Hospital, NNMC, Bethesda, Md. Sept 1963-June 1964.*

When we undertake to discuss such a topic as the one now under consideration, we can do so quite unencumbered by experience. The only persons who can speak with authority are those Japanese who lived through the bombings of Hiroshima and Nagasaki. Those who draw conclusions from past military actions, from laboratory study, and from field tests possibly can approximate the truth and provide us with some factual background for the plans we are forced to make, but experience is lacking. The sincere efforts made by the armed services and Civil Defense officials to provide some sort of reasonable approach to the problem are noteworthy, but we cannot be certain we are right.

We are charged with the responsibility of salvaging as many persons as possible after nuclear weapons strike either our military or civilian populations. Our first reaction may be one of complete despair, feeling that the magnitude of the problem is overwhelming and incapable of solution. Or we may wish the problem away, promising ourselves that such a disaster could never occur or that an impasse exists between the great nuclear powers which precludes the use of atomic weapons. We may, on the other hand, calculate our needs in precise detail and recommend stockpiles of medical equipment and supplies so enormous as to be burdensome. It seems incumbent upon us to try to arrive at a reasonable compromise, therefore, reaching the most with what we consider adequate care. My own personal conviction is that *we would be better off in the long run to expend our energies in those areas concerned with the prevention of nuclear war* rather than in seeking answers to problems we believe are not only unlikely to occur, but are inevitable.

* Doctor Wilson is Assistant Chief of the Surgical Service of the USNH, NNMC, Bethesda, Md.

However, we must also give thought to the ever-increasing possibilities of numbers of persons being simultaneously injured in laboratory and industrial accidents where irradiation is involved, since similar problems may be encountered as in the military situation.

It is imperative, therefore, to review briefly the effects of irradiation on the body. Gamma rays can penerate tissues, breaking down cell nuclear integrity, coagulating protein, destroying sulfhydryl bonds, and blocking DNA production so cell division cannot proceed. Neutrons may cause sodium, phosphorus, and water in the body to become radioactive and hence locally destructive. Alpha and beta particles, effective at short range, exert a deleterious action on cells in similar manner. Among the cells most easily damaged are those with a rapid "turnover," such as cells of intestinal mucosa, marrow, spleen, and gonads. Accordingly, the symptoms of whole-body irradiation include nausea, vomiting, bloody diarrhea, falling WBC, lymphopenia, eventual anemia and pancytopenia, purpura, inability to resist infection, sterility or sex cell mutation, plus a variety of other manifestations.

It is apparent that wounds complicated by irradiation are especially dangerous because the body's healing potential is greatly depressed, with the possibility of invasive infection greatly increased.

As for the effects of nuclear weapons on persons, they are well known. The closer one is to the epicenter, the greater the lethal effect of blast, heat, and ionizing irradiation. Farther away, heat may damage with flash burns or burns occasioned as clothing, buildings, or furnishings ignite. Blast may have an effect on ears, lungs, and other viscera, but far more damage is done by flying and falling objects, including glass and ma-

sonry. Irradiation may strike directly with a lethal or sub-lethal whole-body effect, with or without associated mechanical or thermal injuries, or its damage may come later with fallout.

To determine in what proportion we could expect these injuries to occur, we can turn to the experience of the Japanese. It was evident, of course, that many were killed outright. Among the living, physical injuries were common, with cuts and bruises and shock from blood loss, much due to flying glass. There were fractures, but not as many as could not escape the fires that followed quickly after the blast. Eye injuries did not seem common and ruptured ear drums were seen in only 8 of 370 admissions to an Hiroshima hospital. Flash burns were common and secondary infection was the rule. Irradiation injuries were noted in about 15% of casualties, and seemed to fall into four fairly distinct groups depending on dosage received. Group I died within two weeks, with the "gut syndrome" dominant. Group II died during the third to sixth week chiefly of aplastic anemia and infection. Group III died after the sixth week with the late effects of infection, and it would appear that the secondary effects of blast and thermal effects will be the chief problems. One compilation suggests that blast accounted for 60% of the Japanese casualties, with thermal 25% and irradiation 15%. Exact figures are not important. What is important is that enormous numbers of persons were hurt simultaneously, and that blasts effectively incapacitated nearly 90% of the available medical manpower (doctors and nurses) and destroyed most of the hospitals.

Now, given such data, and trying to learn from them we can accept the following to be true: 1. There may be a great disparity between the numbers of injured and the medical facilities for handling them. 2. The distribution of medical facilities in relation to the casualties may permit grossly unequal patient-loads. 3. Panic, immobility of a stunned population, the disruption of communications, traffic flow, and public utilities will hinder rescue efforts and efficient distribution of casualties.

Despite these hindrances, some plans must be drawn and disseminated. We feel that the principle of triage is of great importance in dealing with large numbers of injured. Triage means sorting. It begins with the natural gross sorting of dead and living immediately after a catastrophe. Among the living will be those who, for one reason or another, never get into the chain of evacuation and never receive treatment except that which they give themselves. Within the disaster area we can expect numerous examples of first aid, some effective, some not, rendered by person to person with whatever material is at hand. In theory, it would be ideal to establish quickly about the disaster perimeter numerous aid stations where medical or paramedical personnel could sort out casualties, treating the simple problems and establishing priorities for evacuation of the more seriously hurt. Again, ideally, a little farther out, lines of evacuation should converge on improvised hospitals or holding stations where casualties could be further sorted and prepared for further evacuation to general hospitals for definitive care. All along the line, natural triage occurs, as persons die or conditions deteriorate.

We believe that triage requires mature judgment to be effective since decisions must be made rapidly with little time for careful examination. We believe that triage should be done, especially at the level of the hospitals, by the most experienced surgeons available. Current thought suggests that patients should be grouped into four categories, and moved and treated accordingly. GROUP I includes those with minimal injury, such as small cuts, bruises, fractured small bones, and second degree burns under 10% of body surface. It also includes those who need only domiciliary care. GROUP II requires IMMEDIATE care, such as hemorrhage from easily-accessible sites, rapidly correctible mechanical respiratory defects, severe crushing wounds of extremities, incomplete amputations, and compound fractures of major bones. GROUP III can afford to have treatment DELAYED. Patients with moderate lacerations without great blood loss, closed fractures, non-critical central nervous system injuries, and burns of 15% to 40% of the body surface will not necessarily suffer great harm if their treatment cannot begin for several hours. GROUP IV patients are to be treated EXPECTANTLY, since their injuries are so severe that salvage is unlikely even with unlimited time, resources, and personnel. In this group belong those with critical chest or central nervous system injuries, burns over 40% of the body, major abdominal wounds and multiple severe wounds.

This system of continuous sorting can never be perfect. Gross errors must inevitably be made, but, in all probability, more will be helped than harmed. Many who would live had they come alone to a hospital where all manner of talent and equipment could be mobilized must be put into Group IV simply because many less seriously hurt can be positively helped with the same expenditure of energy and supplies needed for the one. For young physicians, trained in civilian as well as military hospitals, the natural tendency is to center attention on the critically injured, and it is difficult to grasp the necessity of turning such persons away in favor of the less seriously hurt.

The successful management of large numbers of casualties would appear to depend on several key elements:

1. The medical organization must be simple and flexible.
2. There must be mobility of medical units.
3. Communications must be good.
4. There must be reserve support.
5. Personnel must be versatile.
6. Supplies must be simple and available.
7. Procedures must be standardized.

8. People must be trained, or catastrophe will stun them and make them useless.

There is as yet no good way to neutralize the effects of radiation. There is experimental evidence that marrow or splenic homogenate can protect animals even after irradiation and mice given glutathione, which is rich in sufhydryl groups, may resist the effects of irradiation. We have no good way to tell whether a person has been exposed to ionizing radiation except for dosimeters, and we cannot expect these to be in general use. When a lethal dose of roentgens is delivered, death will ensue, and drugs, blood, and dressings might just as well be used for someone else.

We are, of course, concerned with the effects of "fallout", but when large numbers of persons are hurt and simultaneously covered with active dust, we will probably not be able to offer much in the way of decontamination beyond removal of victims' clothing and the washing of exposed skin and hair. Wounds, of course, can be lavaged, provided, water sources are clean.

The topic is unpleasant, the solutions are tentative, and one cannot help but feel that our energies should be spent seeking PREVENTION rather than CURE.

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The Surgical Team

AN IMPORTANT UNIT OF NAVAL MEDICAL MILITARY PREPAREDNESS

CAPT Robert P. Dobbie, Jr. MC USN. From the Proceedings of the Monthly Staff Conferences of the U. S. Naval Hospital, NNMC, Bethesda, Md., Sept 1963-June 1964.*

In this era of medical specialization, many of us have found ourselves primarily assigned to Naval Hospitals. Here we are encouraged to refine our specialties and devote our entire attention to a relatively small fragment of Naval Medical practice. Under these circumstances, it is all too easy to forget that the original and specific mission of the Medical Department of the Navy, as a whole, and each one of us as individuals, is "to keep as many men at as many guns as many days as possible." The bellicose ring to these words should help remind us that we have important military medical responsibilities even in time of relative peace.

Medical support for the Marine Corps as well as for the Fleet has always been the responsibility of the Navy Medical Corps. When a Marine unit is not actively employed in a combat situation, it is unnecessary to have its full complement of physicians and other medical personnel physically present constantly. This means that in preparation for combat, the shortage of physicians and medical personnel would have to be made up by augmentation from the peacetime naval hospital staff. Thus, various individuals in naval hospitals are placed on augmentation teams for the purpose of filling out the Table of Organization of Marine units, if and when there is need. When used, members of augmentation teams *do not* function as a team but are absorbed as individuals into the basic Marine Medical Structure.

World War II, the Korean War, and the development of modern surgery itself have shown that in many instances it is more practical to bring the operating room to the patient rather than bring the patient to the operating room. The concept of performance of urgent major surgery shortly after wounding, and close to the geographic place of wounding, has stimulated the creation and development of the Surgical Team. A surgical team as now organized consists of three physicians and ten corpsmen—13 men: one fully-qualified general surgeon; one fully-qualified orthopedic surgeon; one fully-qualified anesthesiologist; six operating room technicians; two general service corpsmen; one field medical technician; and one laboratory technician. A surgical team is designed to function as a unit and is to be employed as a unit. It can provide all the manpower and supplies necessary to operate one added operating room anywhere ashore or afloat. Its men and material are completely mobile and can be moved rapidly from place to place as need dictates. Its function therefore is to provide additional surgical support where actual or expected surgical need is in excess of the capability

* At the time of this presentation Doctor Dobbie was a Staff Member of the Surgical Service, USNH, NNMC, Bethesda, Md. He now serves as Chief of the Surgical Service, USNH, Memphis, Tenn.

of the indigenous medical facility. Thus, a surgical team could be assigned to a Marine collecting and clearing company and would double its surgical capability to an AKA or APA where that ship could thus become a small surgical hospital, or to a hospital ship or fixed field hospital staggering under an acute surgical overload.

In times of civil disaster, a surgical team could be sent to assist a local hospital or to set up in a school or church, and with the aid of the local medical personnel add significant increased surgical capability.

The men and material of a surgical team are in effect a mobile operating room. A surgical team is not designed to operate alone, but must be satellited on some existing basic medical facility. To operate it must have provided for it: shelter, power, water, sterilization capability, laundry, and basic personnel maintenance, such as messing facilities. In addition, the full manpower and material of a surgical team will be required to keep the one operating room functioning at maximum efficient capacity. Personnel for triage, preoperative care, postoperative care, special study (x-ray), and patient transportation and evacuation must be provided by the parent organization to which the surgical team is temporarily assigned.

Thus, though a surgical team will function as a team in the full sense of the word, it cannot be put to maximum efficient use if employed alone or without basic support.

When in the field acting in support of a collecting and clearing company, a surgical team is usually provided with two general purpose tents. These tents can be arranged in a variety of ways to suit traffic pattern and terrain, but essentially one tent becomes the operating room and the other becomes the CSR (Central Supply Room). Excess space in both tents can be used for Lab and for minimal pre and postoperative holding. The surgical team equipment is packed in 40-plus field medical chests. Each chest weighs less than 200 pounds and is easily handled by two men. Each chest should be functionally packed and combinations of stacked chests can be used for storage shelves in the OR and CSR. The material includes instruments, suture, linen, dressings, I. V. fluids, medications and specific basic operating room equipment, such as OR table, spotlight, anesthesia machine, and suction apparatus. All of the equipment together is referred to as the Surgical Team Supply Block. The total weight of the Block is about 5,500 pounds. It is easily transportable by any conveyance including most transport aircraft. The material contained in this allowance provides consumable and nonconsumable supplies for support of a Surgical Team for 10 days. Surgical Team Re-Supply Blocks provide consumable items for a 10-day re-supply support of a surgical team.

The operating room is usually set up for the simultaneous use of two tables. The tables are set up in a "V" fashion providing the anesthesiologist easy access to the "head" of each table at the point of the "V" and enough room for a surgeon and one assistant to attend to the necessary surgery at each table. Considering two-table operation with one surgeon, one assistant (OR tech) one scrub corpsman (OR tech), and one circulating corpsman (OR tech) to service each table, and three corpsmen (general and field service) working CSR and the Lab man obtaining blood, it is easy to see how small a surgical team really is and the essential need for support in terms of triage, pre and postoperative care and transport and evacuation.

The Commanding Officer of the sponsoring hospital is in military command of, and responsible for, the administrative support and training of the surgical team until deployed. Once deployed for operation with a fleet or overseas unit, the surgical team comes under the military command of the Operating Fleet Commander who is responsible for the administrative and logistic support of the team. The ranking medical officer of each surgical team is in charge of his team.

YEMENI HEALTH PIONEERS

Ten students from Yemen—a country with an acute shortage of doctors—have been awarded fellowships by WHO to study medicine and pharmacy in the United Arab Republic.

This is the largest number of fellowships ever awarded at one time by the WHO Regional Office for the Eastern Mediterranean to students from the same country. Nine of the fellows from Yemen will study medicine in the Universities of Alexandria (2), Cairo (3), and Ain Shams, in Cairo (4). The remaining fellow is the first Yemeni candidate for a pharmacy diploma, and is studying at Alexandria University.

Another batch of 10 Yemeni students are already undergoing their medical training in the United Arab Republic under WHO sponsorship. The first Yemeni physicians completed training in Cairo in 1959. Until then, foreign doctors made up almost the entire skilled staff of Yemen's three hospitals. Assisting the few physicians are a growing number of Yemeni hakims, or medical assistants, who serve a kind of apprenticeship under foreign and local advisers, including WHO experts.

Altogether 87 fellowships for study abroad have been awarded during the past ten years to students from Yemen as part of WHO's long-range assistance to that country.—WHO Chronicle, 18(3): 108 March 1964.

FROSTBITE*

By Bradford Washburn

Director, Museum of Science, Boston, Mass.

(This article is reproduced from The Polar Record, Vol. II, No. 75, September 1963, by kind permission of the author and the editor of that journal. It originally appeared in the American Alpine Journal 13: 1-26, June 1962, and was reproduced, in slightly different form, in the New England Journal of Medicine 266: 974-989, May 10, 1962. This article is a slightly shorter version containing subject matter from both originals. Appreciation is extended to Mr. Washburn for permission to publish this article in the Medical News Letter.—Editor)

TREATMENT

Only superficial "frost nip" can be treated effectively enough in the field to make it possible for a person to continue on the trail. This is the only kind of frostbite that can be considered medically inconsequential. It is usually encountered in high wind or extreme cold (or both) on the nose, cheeks, chin, ears, fingers or toes. If sudden blanching of the skin is noticed promptly it can usually be treated effectively and completely on the spot by firm, steady pressure (not rubbing) of a warm hand, or by cupping one's hand over the spot and blowing on it until it returns to normal colour. One can very effectively rewarm frost-nipped finger-tips by holding them motionless in the armpit—either of the patient himself or a companion. Although toes can be nipped superficially just like the face or fingers, this is much more difficult to identify than the latter before the injury has progressed beyond the point where it can be treated easily and quickly.

One fairly reliable symptom of incipient frostbite in fingers or toes is the sudden and complete cessation of cold or discomfort in the injured spot, often followed by a pleasant feeling of warmth. If this prime danger signal is instantly heeded, frost nip will never develop into real frostbite. However, it is important to note that many serious cases of frostbitten feet have now been recorded in which there was no preliminary period of anaesthesia. Some people seem to "feel" cold much more than others.

The only practical way to treat nipped toes or heels on the trail is to remove footgear the moment there is any suspicion of danger and to rewarm them immediately on the belly of a trailmate, protecting them from wind by keeping them well covered by parka and shirt during the process. After thawing is complete the patient should change to dry socks and dry insoles and lace footgear back on very loosely to ensure adequate circulation and warmth.

The "buddy system" of constantly watching the faces of one's partners is the best way to identify a frost-nipped face, since this injury cannot be seen or felt by the patient himself. Constant personal vigilance is the only way to avert trouble in one's own fingers and feet. When in doubt, one should investigate thoroughly before it is too late.

These suggestions are only for extremely superficial frost nip. In all cases of bona fide frostbite every effort should be made to get the patient to the best available camp and then to a good hospital as soon as possible. If evacuation to civilization cannot be speedy, the patient should be taken to a low camp with reasonable comfort, equable temperatures, good food and total rest and kept there until a competent physician can take charge. Slow and inadequate rewarming on the trail, often followed by refreezing, can cause so much damage and later complications that it appears to be best to postpone all efforts to thaw injured parts, even for many hours, if by so doing one can get the patient to a place where thorough and rapid rewarming in a

* Continued from Vol. 44, No. 8, October 23, 1964. This is the third and final installment.

deep vessel of water can be effected, and where adequate warmth and reasonable comfort can be maintained afterwards.

If an accident has resulted in leg or arm fractures in extreme cold, traction in outdoor first aid should not be administered, or frostbite may develop rapidly in the extremities beyond the injury. A well-padded temporary splint to immobilize the fracture should be used. A shoe should never be left on the foot below a sprain or fracture—it is the worst sort of insulation, and it should be replaced by other soft, dry clothing. All extremities should be constantly watched distal to fractures or deep cuts, and one should be sure that splints or bandaging is not applied so tightly that circulation is impaired. Whether or not there has been an adjacent injury, special care should be taken to assure the best possible circulation to the frostbitten area.

One should not try to rewarm frostbite on the trail. The patient is treated for exposure if an accident is involved. He must not smoke or drink alcohol, and should be taken to as low and comfortable a camp as possible immediately after frostbite has been discovered, unless there is a very good chance of evacuation by litter or helicopter. Contrary to general belief, a strong patient can walk a long way on frozen feet without further injury to them—and by so doing not only get himself down to a better site for recovery but also save his companions the difficult (and sometimes dangerous) task of dragging or carrying him down after thawing has rendered it impossible for him to walk at all. It must be remembered that if a frozen foot or toe is rewarmed on the trail, the patient immediately becomes a litter case. He cannot assist in his own rescue and may create a major crisis not only for himself but also for his comrades.

No patient should ever be permitted to walk at all on thawed feet or toes, since very serious loss of tissue is almost certain to result.

Here, I think it would be wise to quote directly from a recent letter of a top authority in the treatment of frostbite (Mills, 1961)—in Anchorage, Alaska, an area where a great deal of cold injury may be expected as regular winter routine:

Unless you have an adequate method for transporting the patient down, either by helicopter or by sled so that he himself need not use his hands or feet, I think I would discourage thawing at 18,000 ft—he would be wise to stump his way down with frozen, unthawed feet even if it took 12-18 hours, as long as the objective was adequate shelter, reasonable comfort and a spot from which he could be flown or carried to a hospital. We have had a half dozen patients who have walked for three or four days with completely frozen extremities—some of whom have sustained no loss at all. Others lost toes only. In no case did any of them lose any more of the foot than toes. There appears to be an opportunity even to preserve all of the digits, provided that as soon as the patient reaches a place where thawing can be managed, it is done by the method of rapid rewarming, followed by the regular routine of aseptic hospital care.

Once the patient has reached the site where he is to be thawed, two basic treaments should proceed simultaneously: first for exposure, second for frostbite. While the largest possible vessel of water is being warmed to 42° to 44°C (108° to 112°F) the entire body of the injured man should be warmed as much as possible. It is obviously valuable to have at least one large water vessel (2 to 3 gal) in camp for medical use, in addition to its basic daily value for melting snow water and for dishwashing. A rectangular 5-gal gasoline can with the top or side (best) removed is an ideal container for both uses and very light to carry. An injured person can rarely maintain his own body heat in extreme cold and at rest without outside help, and camp is usually very cold when a party first reaches it after a frostbite accident.

Merely bundling up the patient in additional clothing, cold blankets or even a cold sleeping bag will rarely even maintain existing body warmth. Active rewarming is required. Hot liquids should be administered as soon as possible. The patient should be protected between two warm people under blankets after removal of cold outer clothing—someone should get into a large sleeping bag with him, or he should be put into a sleeping bag already warmed by someone else and kept constantly warm throughout treatment. He should not be permitted to smoke or drink alcohol until healing is completed. The one brief moment in frostbite treatment when use of an alcoholic beverage may be advantageous occurs actually while rewarming is taking place—but only if the patient has reached an environment where he will remain constantly warm thereafter.

All clothing should be removed from the injured part, which is placed in the warm-water bath when it has been prepared and its temperature carefully checked. A rugged thermometer reading to approximately 65°C (150°F) should always be carried as a part of the first-aid kit for this purpose.

If a large enough container is not available to hold the injured part completely immersed the part should be wrapped in towels and warm water constantly poured over them—great care being taken never to have the water warmer than 44°C (112°F).

With young, healthy patients, initial rewarming from a frozen state involves very little discomfort for the first ten minutes. Pain slowly increases, however, until at the end of the rewarming period, it is extremely uncomfortable but not unbearable. Older patients and those suffering from circulatory ailments may experience much more pain than others.

The relief of pain during the rewarming presents a delicate problem in the field, particularly at high altitude and in cases involving shock and exposure.

No pain-relieving drugs, except two regular 0.3 Gram (5 grain) aspirin tablets, should be administered

if the patient is suffering from injuries in addition to frostbite, if he is in a distraught or weakened state or if his temperature is below 36°C (97°F).

If the patient is in good condition, in addition to aspirin he may be simultaneously given one 25 mg meperidine (Demerol) tablet fifteen to thirty minutes before rewarming starts. The use of further medication to reduce this pain in the field is considered inadvisable, because of the danger of bringing on severe respiratory depression—particularly at altitudes above 10,000 ft.

After rewarming is completed, it is strongly recommended not to employ any drug except aspirin for relief of pain during the long convalescence. Two 0.3G (5 gr) tablets may be taken at intervals of two to four hours as needed. This treatment will reduce pain substantially without having any collateral ill-effects on the healing process.

It is safe to help to induce sleep by means of two 250 mg chloral hydrate capsules at bedtime. One more capsule may be given three or four hours later, if necessary. Under no circumstances should more than four of these small capsules (a total of 1 full Gram) be given in any single twenty-four hour period. It appears as if chloral hydrate, unlike narcotics, may be used safely at any altitude.

Rewarming in liquid should last about twenty minutes. Apparently there is no value in rewarming longer than this, if it is done in an ample supply of water at the proper temperature. One must be sure that this is done in enough water (a big bucket) to prevent the frozen part itself from cooling the liquid below 42°C (108°F) and, if possible, keep checking the temperature of the water in the container adjacent to the injured part and keep adding water to retain the desired temperature throughout the rewarming period. One should never add water over 46°C (115°F) and should take great care not to pour added hot water into the rewarming vessel too close to the injured part.

The value of rapid and through rewarming at a location where the patient can remain warm, comfortable and at rest continuously afterward is so clear that all other efforts at rewarming should be postponed for a considerable time, if this delay will assure doing the job properly (Yoshimura and others, 1960; Mills, and others, 1960).

However, if liquid rewarming is impossible, the part is placed against a warm abdomen, or under the armpit, held in warm hands, exposed to warm air or wrapped loosely in warm clothes or blankets after careful covering with sterile bandages to minimize even the slightest friction. Dry rewarming of this sort should be completed in a single continuous operation, which may take three or four times as long as the liquid procedure to do the job completely.

One should never try to rewarm a frozen part by exercising it. If it is really frozen, this will not thaw it, and it will almost certainly increase the extent of the injury.

A frozen part should never be rubbed before, during or after rewarming or rubbed with snow or thawed in cold water. Applying ice water or snow to a frostbitten limb makes about as much sense as treating a burned foot by putting it in an oven! (Mills, 1961).

Never expose a frozen part to an open fire, really hot water or any other intense form of heat. Excessive use of dry heat in rewarming appears to produce almost certain additional injury and possible gangrene; the injured part is suffering from either partial or total temporary anaesthesia, as in a burn, and will not be able to judge for itself the degree of heat to which it is being subjected. It may easily suffer severe additional injury while being thawed out, if this is not done very carefully. If rapid rewarming in water is to be used, one should be sure to check the water temperature with a thermometer or the hand of an uninjured member of the party. The patient should never be permitted to test the temperature with the frozen part.

After rewarming has been completed, general body warmth is maintained throughout convalescence. If the patient must unavoidably stay in a tent, stoves are kept going continuously night and day, to assure a constant, equable temperature.

The injured part is thoroughly cleaned as soon as rewarming has been completed, a mild non-alcoholic antiseptic or very mild soap—administered with thoroughly boiled water—being used. One should not rub or scrub—dirt is dabbed off very gently with sterile absorbent cotton, facial tissue or the softest available cloth (also boiled). Antiseptics involving alcohol should not be used, since they not only may be very painful but are also likely to do further damage to delicate injured tissues.

Ultimate success in the treatment of frostbite appears to depend largely on two factors: the exercise of extreme care during the after rewarming, so that the delicate injured part is not further damaged in any way; and the prevention of infection, which becomes the paramount issue from the time of rewarming to the conclusion of the treatment.

The injured part is kept open to the air, as long as it is warm and nothing touches it. After rewarming, it is not maintained above normal body heat. When it must be covered, loose, soft, dry dressings are used, never greasy, oily dressings. Dry, soft absorbent cotton between toes or fingers will prevent friction between injured parts and protect delicate tissue from further damage. A pillow placed behind the calf of the leg will keep the foot or heel off the sheet. Even light pressure from sheets or tight dressings can increase damage and ultimate loss of tissue. Whether the injured man is cared for in a hospital bed or in a sleeping bag, one should be sure to protect the injured foot or hand from the pressure of the bag or sheets by putting a small box or other frame in the bag with the patient.

Blisters are never pricked or opened. In fact, the part is left completely alone except for changes in dressings—and they are not changed unless they have become very dirty.

The most vigorous possible efforts should be made so get the patient to both doctor and hospital. However, if severe frostbite is encountered in a place whence it is impossible to move the patient rapidly to a hospital, or to bring an experienced doctor to him, the following additional precautions should be taken while the unavoidably lengthy process of healing is being waited out.

The patient is kept entirely still, no matter where the injury, until swelling has completely subsided and blisters and sores have dried up. The injured part should probably be kept horizontal (rather than up or down) during treatment, though there may be some value in depressing it slightly or lowering and raising it periodically to improve general circulation as recovery progresses.

Open sores and oozing blisters are cleaned occasionally with a mild, non-alcoholic antiseptic or very mild soap, exactly as recommended above for immediate post-rewarming treatment. One should dab rather than rub—and do this extremely gently to minimize friction. Even this may be poor surgical policy. If the injured part appears to be reasonably clean, it is better not to tamper with it at all.

When infection is unquestionably present, the use of a "broad-spectrum" antibiotic by mouth is recommended. Many of those that might normally be used in a controlled hospital situation are undesirable or downright dangerous when used in the field because of their side effects.

Demethylchlortetracycline (Declomycin) appears at present to be the best choice, administered in doses of one 150 mg capsule every four hours for four days, and one every six hours for a week if progress is satisfactory and till infection is under full control. If persistent diarrhoea appears, treament is stopped for thirty-six hours and then resumed at half the previous dosage.

One should never cut off any tissue but should let nature effect its own removal. It is virtually impossible, even for an expert and after weeks of treatment, to determine the depth of frostbite injury from examination of the condition at the surface. Even minor surgery will expose underlying layers of damaged tissue and greatly increase the danger of infection to them. Seriously injured tissue often survives almostly miraculously, if not disturbed and kept scrupulously clean and free of infection and irritation.

Physiotherapy should never be attempted in the field by anyone but the patient himself. Frequent gentle movement of all joints of the part involved will help maintain flexibility of the muscles, tendons and ligaments—but this must be done very carefully so as not to result in friction or further injury to the damaged extremities. Great care must be exercised to distinguish between movements that may endanger the injured part and real immobility. The latter, if total and prolonged, can do much harm. Voluntary, careful movement of the joints at regular intervals is an important part of modern treatment. This is done in a whirlpool bath in hospitals for maximum effectiveness and safety. The patient must not be helped in this activity except in the gentle massage or manipulation of the healthy muscles and joints outside the actual area of injury. Voluntary exercise of this sort is a very important part of frostbite treatment. Total immobility can result in serious limitation of motion as a final result.

It now appears as if the best hospital treatment (in addition to that discussed above) for all types of frostbite is one or two whirlpool baths daily, each lasting for about twenty to thirty minutes, in a water-and-hexachlorophene solution at body temperature, 37°C (98.6°F). The patient should be urged to flex his injured part as much as possible during these treatments, but this exercise must not be helped by anyone else or by the uninjured hand of the patient himself.

Throughout the period of convalescence, wherever it takes place, the patient is given the best available food, maximum comfort and total rest. Healing may be somewhat accelerated by a high-protein diet, supplemented by multiple-vitamin capsules.

As treatment progresses one should be sure to warn the patient well in advance about the dramatic appearance that his injured part is soon to have. Even a well-balanced experienced climber can lose his morale fast unless he is prepared to accept philosophically the blisters, discoloration and grisly necrosis of fingers or toes. Furthermore, many an inexperienced doctor has been argued into needless and tragic amputation of basically sound tissue as a result of the hysterical pleadings of an unreasonable patient with frostbite.

Surgery is now considered a last resort, to be used only if uncontrollable infection is present and then to be done only in a hospital. Even minor surgery is to be avoided, both in the field and in the hospital. Most tissue that seems to demand removal will probably remove itself much more effectively than even the best surgeon can do it—and with a saving of more tissue than may seem at all possible at the time when surgery appeared necessary and unavoidable.

The worst looking hands and feet, if treated properly and patiently, will shed their shrivelled black shells painlessly like a glove, suddenly and unexpectedly revealing healthy, pink skin underneath. Patience pays.

PREVENTION

Overall physical well-being, good clothing and intelligent operations in the field are by far the best insurance against frostbite. When one is exhausted, hungry, ill, injured or hypoxic, one's chances of frostbite injury are increased. A few basic tips for prevention follow:

One should dress intelligently to maintain general body warmth. In cold, windy weather the face, head and neck should be protected adequately. Enormous amounts of body heat can be lost through these often neglected parts of the body, despite ample protection everywhere else.

One should eat plenty of the right sort of appetizing food to produce maximum output of body heat. Diet in cold weather at low altitude should tend heavily toward fats, with carbohydrates next and proteins least important. As altitude increases above 10,000 ft carbohydrates are most important, and proteins least. One should experiment with fats. If members of the party digest them readily, they are excellent, but everyone should not be expected to like them at high altitude.

One should not climb under too extreme weather conditions, particularly at high altitudes on exposed terrain, or get too early a start in cold weather. The configuration of the mountain can be used to help one find maximum shelter and maximum warmth from the sun. In short, the climber should use his head—and use it more and more the higher he climbs.

All tight, snug-fitting clothing—particularly on the hands and feet—is to be avoided. Socks and boots should fit snugly, with no points of tightness. In putting on socks and boots, one should carefully eliminate all wrinkles in socks. Old, matted insoles are to be avoided.

Perspiration should be avoided under conditions of extreme cold; clothing that ventilates adequately should be worn. If one still perspires one should remove some clothing or slow down. The feet and hands should be kept dry. Even with vapour-barrier boots, socks must not be permitted to get too wet. All types of boots must be used with great care during periods of inactivity, after exercise has resulted in damp socks or insoles.

Mittens should be worn instead of gloves in extreme cold, except for specialized work like photography or surveying, in which great manual dexterity is required for short intervals. In these situations, a mitten should be worn on one hand, and a glove temporarily on the other, if possible. If bare-finger dexterity is required, silk or rayon gloves should be worn, or all metal parts that must be touched frequently covered with adhesive tape. The thumbs should be removed and fists held in the palm of mittens occasionally to regain warmth of the whole hand.

One should always be careful while loading cameras, taking pictures or handling stoves and fuel, and remember that the freezing point of gasoline is near −57°C (−70°F) and that its rapid rate of evaporation, as well as its extreme chill, makes it very dangerous. Metal objects should never be touched with bare hands in extreme cold—or even in moderate cold when the hands are moist.

Mittens and gloves to be worn in extreme cold should always be made of soft, flexible, dry-tanned deerskin, moose, elk or caribou—not horsehide which dries out very stiff after wetting. Removable mitten inners or glove linings should be of soft wool. Oiled or greased leather gloves, boots or clothing in cold-weather should never be used. Under many conditions it is wise to tie mittens together on a string hung around the neck or to tie them to the ends of parka sleeves.

Extra socks, insoles and mittens should always be carried in the pack. Socks—at least those worn next to the skin—should be kept clean. The use of light, smooth, clean socks next to the skin, followed by one or two heavier outer pairs, is good practice.

Constant use of wet socks in any type of boot will soften the feet, make the skin more tender, greatly lower resistance to cold and simultaneously increase the danger of other foot injury such as blistering.

Toenails and fingernails are kept trimmed to reasonable length.

Hands, face or feet should not be washed too thoroughly or too frequently under rough-weather conditions. Tough, weatherbeaten face and hands, kept reasonably clean, resist frostbite most effectively.

Wind and high altitude should always be approached with respect. Either of them makes otherwise moderate conditions more dangerous. Both together can produce dramatic results when combined with cold.

One should not exercise too strenuously in extreme cold—particularly at high altitude, where undue exertion results in panting or very deep breathing. Very cold air brought to rapidly into the lungs will chill the whole body, and under extreme conditions may even damage lung tissues and cause internal hemorrhage.

Once a person has been thoroughly chilled (without any injury whatever), it takes several hours of warmth and rest to return the body to normal, regardless of superficial feelings of comfort. When recovering from an emergency cold situation, one should not venture out again into extreme cold too soon.

Tobacco or alcohol, even in moderation, should be avoided at high altitude—and never used at any altitude under conditions when the danger of frostbite is present or after it has occurred.

If one has ever been frostbitten, great care must be taken to protect the once injured area from future damage.

Much outdoor work in really cold weather cannot possibly be performed in warmth and comfort. One must learn carefully how cold one can get while still working safely—and then never exceed this limit.

A person who is frostbitten or otherwise injured in the field must keep calm; panic or fear will result in perspiration, which in turn will evaporate, causing further chilling, which will intensify the crisis and aggravate the injury itself.

Tetanus immunity should be kept up to date. It may give valuable added protection in the event of frostbite or any injury in the field.

FROM THE NOTE BOOK

SOUTH POLAR GLACIER NAMED FOR NAVY DOCTOR AT OAK KNOLL

LT Donald R. Walk MC USN, presented a program on "The U. S. Navy in the Antarctic" when RADM C. L. Andrews and his staff hosted the annual Oak Knoll meeting of the Alameda-Contra Costa Medical Association meeting on 14 September.

Doctor Walk, Officer in Charge of Byrd Station, during "Operation Deep Freeze—1960-1961," discussed problems of cold weather medicine—snowblindness, frostbite, abnormal skin conditions, and emotional stresses of living in isolation. He illustrated his talk with his own slides and movies.

Dr. Walk received a commendation from the Commander in Chief, Atlantic Fleet, for his Antarctic service, and only recently he was informed by the National Science Foundation in Washington, D. C., that a glacier in the South Polar region has been named for him. (Walk Glacier is located in the Jones Mountains, Antarctica, at latitude 73° 38-S and longitude 94° 14′ West.)

A graduate of Hahnemann Medical College, Philadelphia, Doctor Walk has been in the Navy for 9 years. He is now in residency training in neuropsychiatry at Oak Knoll.

More than 300 East Bay civilian and military doctors enjoyed the program and the hickory-smoked prime rib roast beef dinner that followed. The annual dinner is a tradition dating back to the hospital's early days.

—From: RADM Cecil L. Andrews MC USN, CO, USNH Oakland, California and District Medical Officer, 12th Naval District, San Francisco, California.

IN MEMORIAM

RADM Carlton L. Andrus MC USN (Ret)	16 September	1963
RADM Spry O. Claytor DC USN (Ret)	23 August	1963
CAPT O. Henry Alexander MC USN (Ret)	26 September	1964
CAPT Theodore R. Austin MC USN (Ret)	12 September	1964
CAPT Horace R. Boone MC USN (Ret)	12 August	1964
CAPT Max J. Brandt DC USN	23 February	1964
CAPT John F. Foertner MC USN (Ret)	30 April	1964
CAPT Rolland R. Gasser MC USN (Ret)	15 August	1964
CAPT Joseph M. Hanner MC USN	24 January	1964
CAPT Edward A. Hyland DC USN (Ret)	13 July	1964
CAPT Henry A. Imus MSC USNR	18 May	1964
CAPT Stanley Jakubs DC USN	29 January	1964
CAPT Paul F. Leahy DC USNR (Active)	23 September	1964
CAPT Leo W. Olechowski MC USN (Ret)	15 March	1964
CAPT Thomas W. Raison MC USN (Ret)	20 February	1964
CAPT George W. Russell MC USN (Ret)	5 June	1964
CAPT Lewis M. Smylie DC USN (Ret)	13 March	1964
CAPT Louis F. Snyder DC USN (Ret)	24 April	1964
CAPT Robert B. Team MC USN (Ret)	9 July	1964
CAPT Albert J. Zuska MC USN	19 July	1964
CDR Charles H. Fugitt MSC USNR (Active)	23 March	1964
CDR Jonathan E. Henry MC USN (Ret)	15 June	1964

CDR Francis R. Hittinger DC USN (Ret)	1	September	1964
LCDR Eleanor M. Brady NC USN	21	Novemebr	1963
LCDR John D. Foley MC USN (Ret)	9	August	1964
LCDR Emma Laurie Gamble NC USNR (Ret)	22	June	1964
LCDR William E. Kelly MSC USN (Ret)	30	November	1963
LCDR John O. LaBrie MSC USN (Ret)	30	March	1964
LCDR Pearl Picard NC USN (Ret)	20	March	1964
LCDR Mary Prescott NC USN	25	October	1963
LT Walter L. Bach MC USN (Ret)	5	August	1964
LT Ben H. Bledsoe MSC USN (Ret)	31	March	1964
LT Bruce C. Farrell MC USNR (Active)	8	October	1963
LT Arnold J. Goldstein MC USNR (Active)	19	July	1964
LT George E. Harris MSC USN (Ret)	26	February	1964
LT Bride C. Lauer NC USNR (Active)	23	January	1964
LT William J. Lowell MSC USN (Ret)	3	April	1964
LT Charles R. Moberly MC USNR (Active)	8	March	1964
LT George I. Vliet MSC USN (Ret)	13	May	1964
LTJG Mary H. McGrath NC USNR (Active)	19	June	1964
Chief Nurse Ada Chew NC USN (Ret)	23	April	1964
CMSW Charles A. Barnes USN	17	May	1964
CMSW George M. Stacy USN (Ret)	13	October	1963
MSW Norman J. Seamster USN (Ret)	10	November	1963

DENTAL SECTION

THE USE OF LOCAL ANESTHESIA IN THE PRESENCE OF INFLAMMATION

Melvyn H. Harris, DMD, Oral Surg., Oral Med. & Oral Path. 18(1): 16-23, July 1964.

The author cites many instances in which local anesthetic agents have been used properly, with signs of excellent anesthesia obtained, yet the dentist has found the anesthesia inadequate at the operative site. He cites inflammation (acute and subacute) as the common denominator in such instances. He compares this observation with other sites of the body such as healthy viscera or cranial bone which are normally insensitive, such as to instrumentation, but which become painful when acutely inflamed.

He points out that the mechanisms and pathways of such pain are not yet completely understood and describes two observations which are suggestive. The first is that distention of many blood vessels will elicit pain. Second, many blood vessels have been shown to be well supplied with nerve fibers, both myelinated and unmyelinated. He cites recent research reports to the effect that unmyelinated fibers (previously considered only vasomotor) are now known to be pain conducting. There has also been a recent demonstration of pericapillary unmyelinated nerve fibers and branching varicose terminals which appeared similar to free-branching "pain" receptors. Additionally, the author cites studies of pain producing substance isolated from inflammatory exudates, which apparently sensitizes pain nerve endings. On these premises he explains that, in cases of dental pathology, the presence of inflammatory exudates and vascular distention provides a mechanism for intractable pain; and the local anesthetic is effective only on the sensory nerve innervation.

The author supports this concept with his observation that local anesthetics containing a vasoconstrictor injected directly into the inflamed area are quite effective. He further supports the concept with histological evidence of unmyelinated nerve fibers associated with capillaries in tissues from a radiolucent periapical area.

The present concepts of the inadequateness of local anesthetics when injected into inflamed tissue are questioned. The two principles, distention of blood vessels causing vascular pain and perivascular nerve fibers conducting painful nerve impulses are currently under investigation. If they prove to be true, injection directly into the inflamed tissue might obtain adequate local anesthesia. Whether this would be due to the effect of the vasoconstrictor or the pressure of the fluid injected into a confined area remains to be determined.

INDICATIONS AND CONTRAINDICATIONS FOR ENDODONTIC SURGERY

Raymond G. Luebke, DDS., Dudley H. Glick, DDS., and John I. Ingle, DDS-MSD, Oral Surg., Oral Med. & Oral Path. 18(1): 97-113, July 1964.

Endodontic surgery, in combination with root canal therapy, has become a remarkably successful method for the elimination of certain periapical pathoses. As with all successful methods, part of its success is due to its simplicity, and therein lie the seeds of its abuse.

The surgical approach to endodontics has been badly misused. In some practices the treatment of every pulpless tooth is followed by periapical surgery. Furthermore, this narrow perspective toward saving the pulpless tooth is generally limited to the anterior teeth, thereby demonstrating a lack of skill and a lack of appreciation for the whole month concept of dental practice. Endodontic therapy, including every form of endodontic surgery, is applicable to all areas of the dentition, posterior and anterior alike.

Recent improvements in materials and methods have made nonsurgical endodontic therapy the treatment of choice in almost all cases of pulpal and periapical disease. The mistaken conviction that every periapical lesion requires surgical treatment is common. Equally prevalent and irrational is the notion that "small" lesions may be treated by nonsurgical means, whereas "large" ones must be managed surgically.

The case for nonsurgical endodontic procedures is strengthened by the patient's reaction. The anxious and fearful anticipation of surgical procedures which is common to most patients and the ever-present possibility of postoperative pain and swelling should act as a deterrent to promiscuous surgical intervention. From this discussion, one might get the impression that the surgical approach need never be used. Such is not the case, for there are definite circumstances in which it is required as an adjunct to conventional therapy. These indications and contraindications to surgery have not been previously spelled out in detail.

Indications for Endodontic Surgery

A. Necessity for drainage
   1. Elimination of toxic material
   2. Alleviation of pain

B. Postoperative failure of conventional therapy
   1. Obvious inadequate filling
   2. Apparently adequate filling
   3. Persistent postoperative discomfort

C. Predictable failure with conventional therapy
   1. Flaring apex
   2. Severely curved root end
   3. Internal, external, or apical resorption
   4. Fractures in the apical third
   5. Persistent infection
   6. Persistent suppuration or exudation
   7. Forecast of acute abscess
   8. Apical cyst

D. Impracticality of conventional therapy
   1. Porcelain jacket crown
   2. Fixed partial denture attachment
   3. Dowel-retention crown
   4. Excessive calcification
   5. Associated periodontal lesion

E. Procedual accidents
   1. Instrument fragmentation
   2. Perforation
   3. Overinstrumentation
   4. Gross overfilling

Each of these indications and several contraindications are explained in the original article and merit complete review and study. Among the contraindications discussed are the health factors and anatomic factors. The dental profession has experienced considerable difficulty in finding within its procedures a suitable niche for surgical endodontic therapy. At one extreme, this type of treatment has been overused and abused. With the excellent results attributable to conventional treatment methods, one can hardly justify surgical treatment of every anterior pulpless tooth on any basis other than economics or expedience. Conversely, only insecurity or inability can explain the fact that in some practices surgical endodontic therapy is never employed. Common sense, sound clinical judgment, and an understanding of the principles described here provide the basis for a broad and workable rationale for periapical surgery.

CORRELATION BETWEEN PLAQUE AND GINGIVITIS

M. M. Ash, Jr. DDS-MS, B. N. Gitlin and W. A. Smith DDS-MS. J. Periondont. 35(5): 58/424-62/428 September-October 1964.

A study of the correlation between plaque and gingivitis before and after prophylaxis was carried out on 78 patients who had reasonably good oral hygiene. Plaque and gingivitis scores were obtained prior to prophylaxis (0 days), and at 5-7, 30, and 60 days following prophylaxis. The results of the study indicate that there is a high positive correlation between the degree of plaque and the degree of gingivitis present.

MOUTH PROTECTORS GUARD TEETH DURING ANESTHESIA

More anesthesiologists are using mouth protectors to prevent injuries to the patient's upper anterior teeth and to dental prostheses during general anesthesia when orotracheal or nasotracheal intubation is indicated, a dental scientist reports. Damage may occur under such circumstances because the incisal edges of the upper anterior teeth commonly are used as a fulcrum for the laryngoscope to expose the larynx before intubation, according to Dr. Samson Flores of the College of Dentistry, University of Illinois.

The traumatic insertion of an oropharyngeal airway may damage the anterior teeth, Dr. Flores noted in September *Dental Abstracts,* published by the American Dental Association.

Month protectors are also indicated during insertion of an airway when:

—The patient has a fixed partial denture, especially one with fixed porcelain facings in the upper anterior region.

—The patient has a single-unit maxillary porcelain or acrylic jacket crown and a sudden blow by an instrument such as the laryngoscope may fracture the tooth.

—The patient has anterior teeth with nonvital pulps and has undergone root canal therapy, with large silicate restorations in the anterior teeth.

—The upper teeth are periodontally involved and weakened by bone loss.

—The patient is between 5 and 10 years old.

—Class III or Class IV restorations which may weaken the incisal edges of the teeth are present.

—A mouth protector can provide a more stable fulcrum point for the laryngoscope in edentulous patients.

The original article appeared in the June-July 1964 issue of the Journal of the American Dental Society of Anesthesiology.

PATIENT REACTION TO DENTURE ESTHETICS

Lester E. Rosenthal, DDS, Max A. Pleasure, DDS-MSPH, and Leon Lefer, MD-DDS-MPH. J Den Med 19(3): 103-109, July 1964.

Dentist-patient interaction, resulting in negative feelings on the part of the patient, may through the mechanism of displacement result in dissatisfaction with completed dentures. One example of this interaction is the passive patient-authoritarian dentist relationship. The dentist who considers only his own feelings about what looks best in the patient's mouth may be disappointed by the patient's lack of acceptance of the completed dentures. An important factor that must be considered is the need in the patient to maintain his body image, as it was prior to the extraction of all his teeth. A method was developed and tested which required the dentist to be passive and the patient to do all the choosing of denture esthetics from color photographs. When the patient's choice was compared to choices made by a psychiatrist and a prosthodontist, little predictability was found. It is believed that the patient fulfills undefined psychological needs and restores his body image by having free choice of all denture esthetics. The results indicated an increase of patient satisfaction and a decrease in the number of adjustments to the dentures following their insertion. The choice of denture esthetics revolved between aggressive looking, passive looking, conformist-textbook style and beauty-contest girl esthetics. Personality profiles could not be constructed for individuals who chose particular setups. It was found that the greatest degree of satisfaction in the control group of patients (who were treated as their dentists usually treated patients) occurred when the dentist considered the patient's feelings as his most important guide in selecting denture esthetics.

PERSONNEL AND PROFESSIONAL NOTES

U.S. NAVAL STATION TREASURE ISLAND HOSTS DENTAL STUDY GROUP

The Dental Department, U. S. Naval Station, San Francisco, California, hosted a meeting of 115 members of the Bay Area Armed Forces Dental Study Group on 15 September 1964. Preceding the meeting, Captain James J. Dempsey, DC USN, Twelfth Naval District Dental Officer, who served as program chairman, led a group of Naval dental officers for chapel services in honor of the late Captain Arne Nielson DC, USN (Ret).

Guest speaker for the occasion was Captain Benjamin W. Oesterling DC, USN (Ret), Professor of Prosthodontics, Loma Linda University, Loma Linda, California. His lecture "Partial Dentures," illustrated with color slides, presented practical methods for handling various types of prosthetic patient problems that are apt to confront the dental officer ashore, afloat, or on isolated duty.

Originally organized as a prosthetic study group, interest has broadened the scope of the Bay Area Armed Forces Dental Study Group to include all phases of dentistry. Regular participation by dental officers of the Army, Air Force, Navy, Coast Guard and the Public Health Service has brought about a most beneficial exchange of ideas and has fostered excellent interservice relations.

REQUESTS DESIRED FOR ASSIGNMENT TO DENTAL TECHNICIAN SCHOOLS

Requests for assignment to Prosthetic (Basic); General, Advanced; and Prosthetic, Advanced Dental Technician Schools are desired from eligible personnel. Since assignment to these schools is normally granted only upon rotation, in accordance with Seavey, Shorvey and Wavevey procedures, eligibility lists are becoming depleted.

Responsible dental officers are requested to disseminate this information to all qualified Dental Technicians who are eligible for rotation. Requests shall be in conformance with BUMEDINST 1510.2D.

CAPTAIN ARMSTRONG PRESENTS CLINIC AT QUANTICO

CAPT Lloyd M. Armstrong, DC, USN, U. S. Naval Dental School, National Naval Medical Center, Bethesda, Maryland, presented a projected clinic entitled *Effective Utilization of Modern Operative Techniques* before the Dental Detachment, Marine Corps Schools, Quantico, Virginia, on 24 September 1964.

U.S. NAVAL DENTAL CORPS RETIREMENTS

The following dental officers retired during the first quarter of Fiscal Year 1965:

CAPT Jack J. Kelly, DC USN
CAPT Gilbert H. Larsen, DC USN
CAPT Kenmore E. Merriam, DC, USN
CAPT Lloyd A. Bohaker, DC USN
CAPT Carl A. Veline, DC USN
CAPT William H. Key, DC USN
CAPT Clarence Y. Murff, DC USN
CAPT George W. Parr, DC USN
CAPT William R. Franklin, DC USN
CAPT Davis Henderson, DC USN
CAPT William B. Johnson, DC USN
CAPT William I. Gullett, DC USN
CDR Melvin L. Hermsmeyer, DC USN

LIST OF NEWLY STANDARDIZED ITEMS AVAILABLE FOR ISSUE

FSN	NOMENCLATURE	UNIT ISSUE	UNIT PRICE
6520–066–1117	Plugger, Plastic Filling, Dental, Gregg No. 1	EA	.95
6520–066–6705	Wax, Dental, Bite, Metal Impregnated, 1 lb	BX	1.40
6520–070–7518	Band, Matrix, Dental Tofflemire, Contour, Preformed, 24's	PG	1.00
6520–076–8684	Bur, Denture Trimming, Steel, 6's	PG	3.70
6520–721–9351	Band, Matrix, Dental, Tofflemire, No. 3, 12's	PG	.14
6520–721–9355	Band, Matrix, Dental, Tofflemire, No. 1, 12's	PG	.14
6520–721–9356	Band, Matrix, Dental, Tofflemire, No. 2, 12's	PG	.14
6520–889–6649	Point Assortment, Pulp Canal, Silver, 90's	PG	4.50
6520–889–7497	Grinding and Polishing Machine, Dental Laboratory, Bench Mounted, High Speed 110 Volt, 60 Cycle, AC	EA	171.00
6520–955–1836	Forceps Tooth Extracting, No. 88R	EA	6.30
6520–955–1837	Forceps Tooth Extracting, No. 88L	EA	6.30
6520–890–1724	Forceps, Articulating Paper, Dental, 6 Inch	EA	1.70
6520–890–1584	Ultrasonic Prophylaxis Unit, Dental	EA	652.00
6520–982–8308	Handpiece, Angle, Dental Prophylaxis	EA	12.05
6530–962–9965	*Sterilizer, Surgical Instrument, Dry Heat Type, Electrically Heated, CRM, 11½ x 6½ x 5 inches, 110v., 60 cy, AC	EA	76.00

*"Policy on Sterilization," U.S. Navy Medical News Letter 44(1): 22-26, 3 July 1964.

PREVENTIVE MEDICINE

COMMISSION ON MALARIA OF THE ARMED FORCES EPIDEMIOLOGICAL BOARD

Doctor Gustave Dammin, President of the Armed Forces Epidemiological Board, announced the formation by the Board of a Commission on Malaria to cope with problems related to the prevention, treatment and control of the disease and the rise in health hazards from malaria infection. The Commission, the 14th to serve the Department of Defense through the Armed Forces Epidemiological Board, succeeds the Board's Committee on Malaria.

Doctor L. H. Schmidt, Professor of Comparative Pharmacology at the University of California, will serve as Director of the Commission. Other members of the Commission will be: Doctor G. Robert Coatney, Laboratory of Parasite Chemotherapy, National Institutes of Health, U.S. Public Health Service, Department of HEW; Doctor Robert C. Elderfield, Professor of Chemistry, University of Michigan; Doctor Clay G. Huff, Department of Parasitology, U.S. Naval Medical Research Institute, National Naval Medical Center, Bethesda; Doctor Harry Most, Chairman, Department of Preventive Medicine, New York University School of Medicine; Doctor Robin D. Powell, Professor of Medicine, University of Chicago; Doctor Lloyd E. Rozeboom, Professor of Entomology, Johns Hopkins University School of Hygiene and Public Health; Doctor Leslie A. Stauber, Professor of Zoology, Rutgers State University; Colonel William D. Tigertt MC USA, Director of Walter Reed Army Institute of Research; Doctor William Trager of the Rockefeller Institute and Doctor Thomas H. Weller, Richard Pearson Strong, Professor of Tropical Public Health, Harvard School of Public Health.

The first meeting was scheduled for 2-3 October 1964 at the Walter Reed Army Medical Center, Walter Reed Army Institute of Research, Washington, D. C.

HOMES FOR AGED IN SWEDEN

In Sweden, special designs for homes for the aged, developed by Swedish architects in a national competition, provide for division of even the largest home into small units in which six or seven residents share a living room, family-sized dining room, and small kitchen for making coffee and between-meal snacks. Private sleeping and toilet rooms adjoin these common facilities. The casual and informal atmosphere of the architecture is carried over into management of the homes, where there are no rules, regulations, or specified hours for visiting or other activities and no segregation by sexes. The directors (an increasing number of homes are managed by women with 3 years of special training) encourage residents to be as independent as possible. Fees charged by the homes are low enough so that, through pensions and other income sources, all elderly people can afford them.—Public Health Reports 78(11): 1009, November 1963.

Fetal Life Study

BRIEFS, Published by Maternity Center Association, 48 East 92nd St., New York 28, N. Y. Fetal Life Study, 27(10): 158-160, Dec. 1963. Republished in U. S. Navy Medical News Letter by permission of Mr. Horace H. Hughen, Editor of BRIEFS.

Since an epidemic of German measles swept Australia in 1940, physicians have known that women who contract the disease during pregnancy often give birth to a deformed baby. For 20 years after that, however, the actual probabilities of deformity in such cases remained a mystery.

In 1960 the Columbia-Presbyterian Medical Center's Fetal Life Study, which has been accumulating data on expectant mothers and their offspring since 1946, produced tables that resulted in greater understanding of the problem.

The tables, based on a review of available literature and data obtained from 25 cases in the study, indicated that the probability of a deformity in a liveborn child was 47 in 100 if German measles occurred in the first month of pregnancy, 22 in 100 if it occurred during the second month, dropping sharply to 7 in 100 the third month and 6 in 100 during the fourth. After this, the tables indicated, the incidence was no higher than that in the general population.

The Fetal Life Study has amassed and sorted clinical data on more than 15,000 pregnancies, ⅔ of them followed from the prenatal stage until a year after birth.

During the spring of 1947 a smallpox scare hit New York City. Many physicians, fearing possible ill effects upon unborn babies, hesitated recommending vaccinations for their pregnant patients.

During the mass smallpox vaccination that ensued, however, the Fetal Life Study collected evidence based on almost 900 cases that indicated vaccination during pregnancy does not increase the incidence of congenital malformations, stillbirths, abortions or infant mortality. This Study has furnished the grist for many other medical reports, but so extensive is the hoard of information gleaned over the years that much of it remains to be interpreted.

The Study Director believes that the data already available, once they are analyzed, will furnish statistics enabling physicians to better predict a woman's chances of bearing a normal, healthy baby.

The Fetal Life Study was one of the first endeavors in this field to gather information directly through observation and questioning of the patient, rather than through secondhand reports.

Original tabulations and analyses were made by hand, but as the volume of data increased, mechanical tabulation became a necessity. IBM cards came into use in 1955, bringing added speed and efficiency to the work of data storage and analysis, but they too are proving inadequate to the huge task, and the Study Director and associates are now exploring the advantages of magnetic tape.

By feeding the machines data already collected, the Study Director and associates hope to focus new light on areas where medical knowledge remains cloaked in lingering shadows, specifically, to determine effects on the baby, if any, of colds or similar infections that attack a mother during pregnancy, and effects due to mother's smoking habits and travel experiences. Plans to study the effect of the mother's age, weight and previous pregnancy history in relation to the present pregnancy are being developed.

The Study Director believes once the computers are regularly analyzing new information as it is gathered, the study will work as an early warning system that will alert them to new trends in birth defects.

Such rapid analysis of data would furnish clues to dangers in time to prevent widespread tragedy, such as that occasioned recently by the drug thalidomide.

In the past, the alert clinician has been the most sensitive warning system. Such was the case with both thalidomide and German measles. But a large, continuing clinical study, such as the Fetal Life Study, gathers in a relatively short time, with the aid of computer analysis, certain clinical information which no one clinician could experience in a lifetime.

MORE LIVES COULD BE SAVED

About 90,000 men, women and children will die in the United States this year of cancer unnecessarily, the American Cancer Society has estimated. These lives could have been saved with earlier detection and prompt, proper treatment of the disease.

You Can Prevent Foodborne Illness

PHS Pub No. 1105, November 1963 (A copy may be obtained from Superintendent of Documents, U.S. Government Printing Office, Washington, D. C. 20402. Price 5 cents; $2.50 per 100).

Foodborne Illness—A Major Public Health Problem.

An estimated one million or more persons in the United States are affected each year by foodborne illness (food poisoning).

Why Do These Illnesses Occur?

Food poisoning occurs when individuals who prepare and serve food fail to apply known food protection measures.

What Causes Food Poisoning?

Foodborne illnesses may occur after eating: food containing disease-producing bacteria (so-called germs), food containing poisons (toxins) produced by harmful bacteria, food containing parasites which can infect man (such as worms in meat), food which is contaminated, either accidently or carelessly, with harmful chemicals, or food which is naturally poisonous (such as some mushrooms).

Foodborne Illness Can Be Prevented!

First, prevention starts with the food. A good safe food product must be used, one that is protected from contamination from producer to user. (Inferior, unsafe food cannot be magically transformed into a safe, premium product.) Then correct preparation, storage, and refrigeration procedures must be followed.

Second, all food service workers should practice good personal hygiene. They should wash their hands thoroughly and often. They should not work if ill; if they have a bad cold; or have an infected cut or burn on the hands. A person's hands and spray from his coughs and sneezes all contain literally millions of germs that can thrive on foods if the right time and temperature, and conditions of moisture exist.

Third, food preparation and serving techniques must be correct. Food should never be touched by the hands of a food service worker whenever a clean sanitized utensil can be used instead. Potentially hazardous foods, which include those most frequently involved in foodborne disease outbreaks (meat, eggs, milk, cream pies, etc.) should be stored at temperatures below 45° F. (BUMED recommends 40° F.) or above 140° F. at all times except during actual preparation or service. Dishwashing procedures must also be effective. A "slip-up" in one of these phases of food preparation and service can undo all other efforts to provide protection.

Food service establishment operators find that it is good business to protect their patrons, and incidentally themselves, from food poisoning.

CASE STUDIES

If a person who prepares and serves food asks "Can I be the cause of a food poisoning outbreak?" the answer is "yes" whether the person asking the question is a chef, waitress, dishwashing machine operator, homeowner or other person who handles food or food equipment.

The following examples are but a few of thousands of recently reported cases where it did happen. The cases are summarized, and prevention methods are then given.

CASE 1.—Seventeen persons aboard a ship became ill within 8 hours after eating a noon meal. Nausea, vomiting, cramps, and diarrhea were the symptoms. Macaroni had been cooked prior to the meal, and chopped pimentos, lettuce, boiled eggs, mayonnaise and mustard were hand-mixed by two mess cooks. One of those cooks had several minor cuts on two fingers. These finger cuts yielded *Staphylococcus aureus,* the same kind of bacteria found in the salad.

PREVENTION.—Never use your hands to mix foods when clean sanitized utensils can be used! Never work with food when you have infected cuts because the germs causing the infection may be a source of foodborne illness!

CASE 2.—Following the drinking of punch served in a coffee shop, 14 of 25 persons drinking the beverage became ill with cramps and diarrhea. The punch had been prepared in a galvanized iron container, then stored in a refrigerator. Upon investigation, it was shown that the container, although new, had been corroded by the action of the acid in the punch. Chemical analysis of the remaining punch showed that a considerable amount of zinc had been dissolved from the container lining.

PREVENTION.—Never use utensils containing toxic materials in the preparation and storage of foods. Food containers made with metals such as antimony, zinc, cadmium and lead have been sources of foodborne illnesses. All containers used for storing, transporting, preparing and serving of food should be made of smooth, easily cleanable, nontoxic materials.

CASE 3.—Approximately one hour after supper, four persons vomited, became nauseated, dizzy, and had difficulty in swallowing, talking and seeing. During supper they had eaten what they thought were collard greens. Actually, these "greens" were the leaves of a wild tobacco plant.

PREVENTION.—Always be certain that you know any foods you pick for yourself. Some plants may look alike, yet actually be quite different.

CASE 4.—Two persons became ill about 15 minutes after eating mushrooms. Symptoms included nausea, dizziness, numbness, and vomiting. The mushrooms had been picked fresh, refrigerated, peeled, cleaned, boiled, and fried. Examination of similar types of mushrooms showed that these were poisonous.

PREVENTION.—Never pick mushrooms unless you know the difference between nonpoisonous and poisonous varieties. In most cases, only an expert can tell the difference.

CASE 5.—Sixteen persons experienced acute upset stomachs within 5 hours after their evening meal. Egg salad was the food suspected. The eggs were boiled and shelled early that afternoon. One of the cooks then added mayonnaise and relish to the chopped eggs. After preparation, the salad was not refrigerated. The cook who prepared the salad had tonsillitis.

PREVENTION.—Food service workers should not work when they are ill. Potentially hazardous (readily perishable) foods should be refrigerated at temperatures of 45° F. (BUMED recommends 40° F.) or below, or kept at 140° F. or above until serving.

CASE 6.—One hundred and fifty-five persons became ill with severe diarrhea and stomach pains. The suspect meal, roast beef and gravy, had been eaten by 170 persons. This beef and gravy had been prepared the day before and allowed to cool in open trays without refrigeration for 22 hours. *Clostridium perfringens* organisms were found in the beef and gravy.

PREVENTION. — Potentially hazardous (readily perishable) foods should be thoroughly cooked and then either kept hot (140° F. or above), or cold (refrigerated to 45° F. (BUMED recommends 40° F.) or below) until serving time.

CASE 7.—At a church dinner, over half of those who had eaten barbecued chicken became ill within 6 hours. The chickens had been cooked the day before, immediately refrigerated overnight, then reheated the next morning. After reheating, they were cut into quarters with the butcher's meat saw. The chickens were without refrigeration from 10:00 a.m. until being reheated again around 5:00 p.m. Large numbers of *Staphylococci* were recovered from the chickens. These bacteria could have come from the meat saw or from the cook's hands which contained numerous small cuts and abrasions.

PREVENTION.—Food service workers should never use a utensil or work surface in food preparation unless it has been cleaned and sanitized. The worker should not work with food if he has open infected cuts or abrasions. As an added precaution, potentially hazardous (readily perishable) foods should be kept hot (140° F. or above) or cold (45° F. (BUMED recommends 40° F.) or below) except when being prepared or served.

CASE 8.—Eleven cases of trichinosis occurred in a small community among seven families who had eaten raw smoked sausage prepared from the same hog. Symptoms were high fever, muscle pain, stomach cramps, chills, and general weakness. This illness was caused by *Trichinella spiralis,* a small parasite present in the uncooked pork.

PREVENTION.—Pork should never be eaten unless it has been thoroughly cooked. All pork, unless otherwise treated to destroy trichina should be cooked sufficiently to reach an internal temperature at least 150° F. This destroys the parasite. (Use a cooking thermometer.)

CASE 9.—Four cases of botulism, including one death, occurred as a result of the consumption of home-canned chili. Symptoms were vomiting, dizziness, difficulty in breathing and speaking, and blurring of vision. There was paralysis for a time. The chili had been home-canned under insufficient temperature and pressure. This permitted a toxin to be formed in the chili.

PREVENTION.—A pressure cooker should be used to can all meats or low-acid foods. The high temperature and pressure used will destroy the spores which produce toxin. Foods which contain the toxin often smell no different than safe foods, but even a taste, if the toxin is present, may be sufficient to cause illness and death. Commercially canned foods are safe to use since temperatures and pressures used in their preparation are high enough to destory the bacterial spores.

It's Up To You!

As can be seen from the cases described, foodborne illnesses can happen if safe food service rules are not followed. Good, safe food service practices will help *you* to prevent foodborne illness.

Male circumcision has been shown to be completely effective in preventing cancer of the penis, and probably also helps prevent cancer of the uterine cervix in the female partner.—WHO Chronicle 18(9): 325, September 1964.

Public Health Regulations for the Importation or Reentry of Pets into the United States

USDHEW, PHS, Identical Memorandum, DFQ:10, to Editors of Pet Magazines and Others Concerned with the Facilitation of International Travel, 6 Aug 1964.

Editorial Note

General Order No. 20, Department of the Navy, Washington, D. C., 12 May 1962, incorporates information on importation of psittacine birds, dogs, cats, or monkeys. Additional information regarding Federal regulations may be obtained from: Chief, Bureau of Medicine and Surgery (Code 72), Department of the Navy, Washington, D. C.; the nearest Public Health Service Quarantine Station in the United States; or offices of the U. S. Department of State in various countries. Information regarding State and local regulations should be obtained from the State and local health departments in the State of first arrival and destination. Information regarding regulations of other countries should be obtained from the health departments of the countries involved or from their representative offices in the United States.—Director, Preventive Medicine Div., BuMed.

SUMMARY OF PUBLIC HEALTH SERVICE REGULATIONS

71.152. *Psittacine birds.* Psittacine birds (parrots, parakeets, lovebirds, macaws and others of the order Psittaciformes) shall not be brought into the United States, its Territories, or possessions for purpose of sale or trade. Psittacine birds may be brought in under certain conditions (specified in the regulations) for medical research or zoological parks; pet birds may be imported as follows:

(3) *Pets.*

(i) A maximum of 2 psittacine birds may be imported by the owner thereof provided (a) the birds appear to the quarantine officer to be in good health; (b) they are not intended for sale or trade in the United States; (c) not more than 2 birds are brought in by members of a family comprising a single household; (d) neither the owner nor any member of his family within his household has imported any other birds under this paragraph in the preceding 12 months; and (e) the birds have been in the owner's possession and personal custody for the 4 months preceding arrival, except for any period occasioned by arrival of the owner and birds on separate conveyances *or as provided in subdivision (ii) of this subparagraph.*

(ii) A maximum of 2 psittacine birds that have been in the owner's possession and personal custody immediately before arrival, but for less than 4 months, may be admitted provided (a) other requirements of subdivision (i) of this subparagraph are met and (b) upon admission, for a period beginning with their arrival and ending 4 months after they first came into the owner's possession and personal custody the birds are confined in detention facilities, either at the port of arrival or elsewhere, at the owner's expense and under such arrangements approved by the quarantine officer at the port of arrival as will reasonably assure against transmission of psittacosis. If the owner does not make the necessary detention arrangements before arrival of the birds, they may be excluded unless he arranges for such detention immediately upon their arrival.

(4) *Return to the United States.*

Psittacine birds taken out of the United States may be admitted upon their return if either of the following conditions is met:

(i) *Without a permit.* The birds may be admitted without a permit upon their return on one or more occasions, if the requirements of subparagraph (3) of this paragraph are complied with on each occasion.

(ii) *With a permit.* If the requirements of subparagraph (3) of this paragraph are not fully complied with, they may be admitted provided (a) they are accompanied by a permit for return issued by the Surgeon General, (b) the owner submits a statement certifying his compliance with the terms of the permit and such other information as the Surgeon General may require, and (c) the birds appear to the quarantine officer to be in good health. Application for such a permit may be denied unless the owner of the birds applies for such permit prior to their departure from the United States and the application includes a state-

ment as to the itinerary, the number and description of the birds, and such other information as the Surgeon General may require.

71.154. *Dogs, Cats, and Monkeys (Summary).*

1. General Inspection Requirements. All domestic and wild members of the dog, cat, and monkey (primate) families brought into the United States from any foreign country shall be inspected at the port of arrival for evidence of communicable disease. When such an animal does not appear to be in good health on arrival (i.e., it has such symptoms as emaciation, lesions of the skin, nervous system disturbances, jaundice, or diarrhea), the medical officer in charge may give the owner or his agent an opportunity to call in a licensed veterinarian to examine it and give or arrange for any tests or treatment indicated, at the owner's expense.

Only animals in which no evidence of disease communicable to man is revealed shall be admitted. If necessary to detain the animal pending determination of its admissibility, the owner or agent shall provide satisfactory detention facilities.

2. Dogs Only; Rabies Vaccination. Vaccination for prevention of rabies is required for dogs brought into the United States, with certain exceptions for wild members of the dog family; dogs coming from rabies-free countries; dogs destined to zoological parks or for research; and puppies under three months of age. (The regulations must be consulted for details of these exceptions and conditions under which they are made.

Where rabies vaccination is required, the dog shall be accompanied by a valid certificate of such vaccination identifying the dog, signed by a licensed veterinarian, and specifying that such veterinarian vaccinated the dog with "nervous-tissue" or "chicken-embryo" vaccine, on a stated date. Vaccination must be accomplished with nervous-tissue vaccine more than one month but not more than 12 months before the dog's arrival, or with chicken-embryo vaccine more than one month but not more than 36 months before arrival. If a dog that is subject to vaccination arrives without a valid certificate of rabies vaccination, it shall not be admitted until this requirement is met as provided in the regulations.

Additional Requirements for Monkeys Only: Anti-Yellow Fever Measures. Monkeys arriving from or having passed through a yellow fever infected local area, or an area in which there is reason to suspect the existence of yellow fever virus, shall be admitted only if inspection of the animals reveals no sign of yellow fever, and there is evidence satisfactory to the medical officer in charge that: (a) at least 9 days have elapsed following their departure from the last such area contacted, or (b) they arrive in a mosquito-proof structure, and have been kept in such a structure for at least 9 days immediately before arrival, or (c) they have an effective immunization against yellow fever.

RPR CARD TEST FOR SYPHILIS SCREENING IN FIELD INVESTIGATIONS

W. J. Brown, J. F. Donohue, and E. V. Price. Public Health Reports, 79(6): 496-500, June 1964.

The rapid plasma reagin (RPR) card test was described by Portnoy, et al., in 1962, as having the necessary qualities for an effective field test: (a) rapid simple method for obtaining plasma from finger stick blood, requiring neither water bath nor centrifuge; (b) a stable antigen suspension; (c) rapid performance; and (d) adequate sensitivity and specificity.

To evaluate the practicability of the RPR card test for use as a screening procedure in field investigations, 28 nontechnical venereal disease investigators from various sections of the country received a 2-day screening course at the Venereal Disease Research Laboratory. Communicable Disease Center, Atlanta, Georgia, in the performance of the RPR card test. Each investigator was given an RPR card testing kit with the following instructions: All named contacts to early infectious syphilis will be tested by both the RPR card test and by the VDRL quantitative slide test. In addition, all named contacts will have physical examinations in the clinics. For all others tested (suspects, associates, high-prevalence groups, and so on) the VDRL slide test is required only if the RPR card test is reactive.

Between April 1962 and March 1963, 3,920 persons were tested by the RPR card test, and on 2,788 of these the VDRL quantitative slide test was also performed. Among 295 contacts who were reactive to the card test, 21% were nonreactive to the VDRL; in all others than contacts, 25% of 369, who were reactive to the card test were nonreactive in the VDRL slide test. Among contacts who were nonreactive to the RPR card test, 97.8% were also nonreactive to the VDRL test, and for all others tested this rate was 98.5%.

Combining reactive and weekly reactive results, there was 92.9% agreement between the RPR card test and the VDRL slide test in contacts and 93.2% agreement in all others tested. Agreement among the 28 investigators performing the card tests ranged from 73 to 100%. Among patients diagnosed as syphilitic, the RPR card test and VDRL slide test were nonreactive in 10%; and among persons classified as nonsyphilitic, the

RPR card test was nonreactive in 94.1% and the VDRL slide test was nonreactive in 99.5%. It appears that both tests were equal in sensitivity but that the VDRL slide test was more specific than the RPR card test. However, in untreated primary syphilis, the stage in which serologic tests are subordinate to the darkfield in establishing a diagnosis, the RPR card test showed greater sensitivity than the VDRL slide test (84.3% compared with 71.1% reactive). Both were 100% reactive in the secondary stage. In all other syphilitic categories, the VDRL slide test was more reactive than the RPR card test, reflecting greater confidence in the VDRL in establishing a diagnosis.

One of the principal objectives of this evaluation was to determine the reliability of the RPR card test when performed by nontechnical personnel. It was found that nontechnical personnel compared favorably with experienced serologists. It was the consensus of the 28 investigators that the card test was too cumbersome for confidential field investigations. They agreed that it was of value in the clinic as an aid in completing the diagnosis of contacts on the first clinic visit. Also, since only 5 drops of blood are required for the RPR card test, it is considered useful in testing babies.

NOTE:

1. The RPR card test for Syphilis kit is now standard as FSN 6505-985-7224.
2. The RPR card test was evaluated by the U.S. Navy Preventive Medicine Unit No. 2, Norfolk, Virginia, and found to be suitable for use as a screening test on board ships.—Director, Preventive Medicine Div., BuMed.

WASPS, BEETLES IN CALIFORNIA TESTS FOR NATURAL HOUSEFLY CONTROL

Pest Control J., Wasps, Beetles in Calif. Tests for Natural Housefly Control, 32(7): 64, July 1964

California is not the original habitat of the Old World housefly, *Musca domestica,* but ranching practices in California help it thrive, despite the Southwest's dryness. Another great help to houseflies is the absence of natural predators.

To correct this deficiency an entomologist from the Riverside campus of the University of California, traveled to the Caribbean Sea area in search of housefly predators and found four tiny wasps and a Jamaican beetle.

These insects passed initial screening tests for predation and safety of importation and are now being reared in large numbers at Riverside.

First releases of wasps on poultry farms were in April. Periodic counts will show whether the wasps are preying on houseflies and whether the wasps are reproducing too. Although they reproduced under laboratory conditions, California's naturally dry environment could have a bad effect on them.

The second insect imported is a beetle which is actually a double predator. This beetle, called *Aleochara,* lays its eggs in housefly larvae and also voraciously eats eggs and pupae. It has been cultured for the first time in Riverside's insectary.

"Biological control is always a gamble," the entomologist stated. "There's no positive way to predict if these imported beneficial insects will do the job; there are many variable factors in this new environment. The best we can do is try the insect to see what happens."

These insects are the most promising ones found so far, and chances that they will be able to reduce fly populations in heavy fly breeding areas look very good.

DID YOU KNOW?

That there has been a significant increase of cases of leptospirosis affecting farmers working in fields, plantations, and fishponds of Upper Galilee?

E. Nagy and G. Schick, from the Safed Government Hospital in Israel report that in 27 of a total of 70 cases detected in the past 5 years, the infecting agent was *Leptospira mini Szwaizak.* In a lesser number of cases *L. grippotyphosa* was identified. (1)

That the Supreme Court of Ireland recently upheld the constitutionality of the Health (Fluoridation of Water) Act of 1960?

This opinion was rendered after what is called "the longest civil action in the history of Ireland." (2)

That more than twice as many children die each year from measles complications as from poliomyelitis? (3)

That Mexico is no longer considered a yellow-fever receptive area? (4)

That Gout used to be a very rare disease in Japan? However, it is becoming more and more common, reaching the level of gout incidence and distribution of the western countries and the United States. Some authorities think that this could be due to the rapidly changing way of life in Japan. The clinical picture of gout in Japan does not differ at all from that observed in other countries. (5)

That the entire island of Guadalcanal, British Solomon Islands Protectorate, has been given its first protective layer of antimalaria spray?

Over 5,000 houses have been sprayed, providing protection against malaria to more than 15,000 people on the island. (6)

That the little quarter-inch long *Stenodus* beetle fends off attacks from a water spider, a fast, long-legged bug that is its customary nemesis, by simply squirting out a charge of fluid detergent from a pair of abdominal glands?

The detergent destroys the thin elastic layer of water that marks the boundary between fluid and air. With

that surface tension gone, a small water wave rises and propels the *Stenodus* out of danger. When the attacking water strider, which is normally supported by the film of surface tension, tries to follow, it sinks and drowns. The *Stenodus* exhausts all of its detergent in one 45-foot dash, and needs a week or more to replenish its supply. (7)

That the ancient Egyptians depicted children as sucking the index finger and not the thumb?

Amongst modern Egyptian children, index sucking obtains at the present time, but the authors found two small offspring of an Egyptian father and a German mother sucking thumbs in the usual manner. (8)

That the noisy, quarrelsome *Passer domesticus,* the English sparrow, has changed his size and color since he arrived in North America from Germany and England in 1852?

His wings and body have changed size, and his color tends to be a darker or lighter brown, according to the section of the country where he lives. Sparrows from the northern and Pacific coastal areas and from the Valley of Mexico are darkly pigmented, while those from the arid southwestern regions from southern California east to southern and central Texas are relatively pale in color.

The sparrow since 1852 has spread to Vancouver about 1900, Death Valley in 1914, and Mexico City in 1953. The rapid evolutionary changes in color and size were studied by scientists who collected a series of 100 to 250 specimens of the English sparrows at various localities throughout North America and the Hawaiian Islands, Bermuda, England and Germany. (9)

That strangulated inguinal hernia is exceptionally common in the Basoga tribe of the Busoga district of Uganda?

The author, from the Jinja hospital in Soroti, Uganda, reports that this condition may be due to the prevalence of a congenital direct inguinal hernia, which has in the past been generally regarded as a rarity. (10)

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TICK PARALYSIS—ARKANSAS

Morbidity and Mortality Weekly Report, Communicable Disease Center, PHS, DHEW, Atlanta, Ga., Tick Paralysis-Arkansas, 13(29): 250, 24 July 1964.

On May 30, 1964, a 58-year-old, white male telephone lineman developed weakness and paralysis of his left hand and arm. The previous night his wife had found and attempted to remove a tick from his scalp.

The patient was hospitalized; a physical examination demonstrated numerous old tick bites and 5 new bites over the left scapular region. The examining physician located and removed from his scalp the remainder of the tick which had been partially removed by his wife the previous night. Neurological examination showed weakness of the flexor muscles of the left arm and opponens function of the left thumb with paralysis and mild weakness of extensor muscles as well. The patient remained afebrile and a complete medical evaluation failed to reveal any underlying metabolic or neurologic disease.

The patient fully recovered within 36 hours after complete removal of the tick from his scalp.

EDITOR'S NOTE (from the above reference): The subject of tick paralysis has been extensively reviewed. The usual clinical picture is described as ascending flaccid paralysis beginning in the lower extremities which may progress to complete paralysis and death unless the tick is completely removed. Isolated nerve palsies, as would appear to be present in this case, also have been described.

The illness occurs most frequently during the summer months when exposure to ticks is most common. Poliomyelitis has been a major consideration in the differential diagnosis. The absence of fever, muscle spasm, and neck stiffness, the lack of spinal fluid abnormalities, and the identification of the offending tick are usually adequate to clarify this differentiation. Following removal of the tick, recovery is dramatically rapid, with disappearance of neurologic abnormalities usually within 2 days and complete recovery within 1 week.

In the United States, most human cases have been associated with bites from the wood tick, *Dermacentor andersoni,* in the West and Northwest, and the dog tick, *Dermacentor variabilis,* in the East.

The substance responsible for the paralysis has not been identified but is believed to be a toxin originating from saliva of the tick or from ova of the gravid female. Thus, care should be taken to completely remove all parts of the tick as rapidly as possible.

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MISCELLANY

A Look At Our U. S. Naval Hospitals—Guam*, Mariana Islands

(Second in a Series)**

Historical Notes: The history of the Navy's Medical Department on Guam began on 20 June 1898, when Passed Assistant Surgeon Ammen Farenholt, medical officer aboard the USS CHARLESTON, landed with the first American Forces on Guam during the Spanish-American War. It was not until the spring of 1899 that a naval occupational organization in the USS YOSEMITE arrived at Guam. The medical officers of the vessel were Surgeon Philip Leach and Assistant Surgeon Alfred G. Grenwell. Thus the first Senior Medical Officer for the Guam area was Surgeon Leach.

During this time Navy sick quarters were established, sanitary regulations were effected throughout Agana and outlying areas and, on 10 June 1901, the cornerstone was laid for the Maria Schroeder hospital in Agana. Staffed by Navy Medical Department personnel, the hospital cared for the indigenous population, military dependents and naval personnel. In 1905 the Susana Hospital for women and children was founded. Professional services again were furnished by the U.S. Navy Medical Department. In the same year islanders were vaccinated against smallpox. Another noteworthy achievement was the establishment in 1918 of a school for the instruction of midwives who were licensed when eligible. From 1905 to 1918 there had been 50 cases of tetanus neonatorum (umbilical cord infection), all of whom died. From 1918 on there were no reports of "cord tetanus." An elementary course in hygiene was instituted in public schools; and a Tuberculosis Hospital was established in 1916 at Agana Heights, near the location of the present hospital.

During the period from December 1941 until July 1944 the island of Guam was occupied by forces of the Japanese Government.

Following our re-capture of Guam, Naval medical facilities were established in July 1944 as the U.S. Fleet Hospital, No. 103, later redesignated as U.S. Naval Hospital, Guam in January 1946. In March 1946, the U.S. Naval Medical Center, Guam was commissioned under a Medical Officer in Command and was composed of the following activities: U.S. Naval Hospital; Guam Memorial Hospital; School of Medical Assistants; and School of Dental Assistants. In October 1949,

* Adapted from material in the hospital's BRIEFING DATA submitted by CAPT James G. Kurfees MC USN, Commanding Officer.

** The first in this series was USNH, Yokosuka, Japan—described in the Medical News Letters of 7 and 21 August 1964 (Vol. 44, Nos. 3 & 4). The latter issue covered at length the history, developments and current operations of the Japanese Intern Program at USNH, Yokosuka—and the impact the program has had on favorable Japanese-American medical relations.

U. S. NAVAL HOSPITAL—GUAM, MARIANA ISLANDS

Official Photograph—U.S. Navy by Photographic Laboratory of this Hospital.

the 22nd Army General Hospital was disestablished and the Navy assumed responsibility for care of all Armed Forces personnel entitled to hospitalization. On 1 July 1950, the U.S. Naval Medical Center was disestablished and the U.S. Naval Hospital, Guam assumed functions of the Center. The Schools were subsequently disestablished in February 1951, when responsibility for the Civil Government of Guam was transferred to the Department of the Interior.

Public Law 653/80th Congress on 16 June 1948, authorized construction of the present permanent hospital facilities at a cost of $25,000,000. This was subsequently reduced to $21,000,000 by Public Law 209/83rd Congress on 7 August 1953, due to utilization of Construction Battalion (CB) labor for the construction of the Public Housing. At this time, and prior to completion of various planned facilities, Navy policy concerning contracts for Military Construction projects was changed from CPFF (cost plus fixed fee) contracts to Lump Sum contracts. Bid Invitations were issued and Awards made under the new policy for the balance of the planned facilities. Total construction cost was $14,670,687. This amount has been reduced to the present value by transfer of Housing and public works type facilities to Public Works Center, Guam as of 1 September 1960, upon consolidation of the Public Works Functions in the Guam Mariana Islands complex. In 1948 field surveys were made of various locations and selection of the present site was made. In July 1948, the Architect-Engineer was authorized to prepare preliminary design. In March 1950, all design was stopped for review for conformity with congressional austerity concepts. In October 1950, the designs were finally approved. In September 1951, the first ground was broken and site clearance was begun. In July 1952, final plans were received and major construction commenced. Hospital facilities were moved to the present building on 23 October 1954, and the formal dedication ceremony was held on 2 November 1954, with RADM Lamont Pugh, then Chief, Bureau of Medicine and Surgery, as the principal speaker.

During the years the Navy Medical Department was responsible for medical care on Guam, great advances were made in health and sanitation. Today, diseases such as typhoid fever, dengue, leprosy, yaws, and gangosa are practically unknown. The general health of both military and civilian population is excellent, although there is still an extremely high incidence of Amyotrophic Lateral Sclerosis—a neurological disease of unknown etiology—among native Guamanians. The U. S. Public Health Service is conducting an extensive study of this and related neurological diseases in this area, and it can be expected that much benefit will eventually accrue from these studies and research efforts.

Mission. To provide general clinical and hospitalization services for active duty Navy and Marine Corps personnel, active duty members of the other armed services, dependents of active duty personnel, and other authorized persons as outlined in current directives. To cooperate with military and civil authorities in matters pertaining to health, sanitation, local disasters, and other emergencies.

Task. The following specific tasks are assigned to accomplish the mission.

Provide, train and maintain augmentation personnel for immediate availability to the operating forces as provided in current instructions.

Provide general clinical and hospital services to members of the civil population at the request of the Government of Guam; the High Commissioner, Trust Territories of the Pacific Islands; and the Naval Administrator, Bonin-Volcano Island Group, in accordance with current directives.

Maintain three beds for Veterans Administration patients.

Serve as a collection and transshipment point for air and surface evacuation of patient personnel who are returned to the Continental United States for medical reasons.

Provide a mobilization capability for casualties resulting from military action in the entire Far East area.

Provide, upon request, emergency and disaster medical and dental stores to Armed Services shore activities and fleet units.

Conduct a clinical clerkship training program for Micronesian doctors.

Conduct a training program for Micronesian nurses.

Conduct postgraduate training program for Micronesian medical personnel.

Operate and maintain naval cemeteries located at Guam.

Provide mortuary services as required by competent authority.

Provide on-the-job specialty training for Group X hospital corpsmen as appropriate.

Conduct in-service training of Group X hospital Corpsmen.

Regional data processing center for assigned activities.

Perform care-of-the-dead program under the general supervision of the Bureau and in coordination with the program administered by the Commandants as outlined in current directives.

Provide or undertake such other appropriate functions as may be authorized or directed by higher authority.